

Company interests and foreign aid policy: Playing donors out against each other

Espen Villanger

WP 2003: 5

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1. Introduction^{*©}

“... as the representative of the World Bank on the ground, I came under pressure from several sources, some of them quite surprising, to release the tranche [loan] with minimal attention to conditionality. There was a steady stream of private sector representatives, domestic and foreign, arguing for the release of the tranche ... because some of them had specific contracts with the government which were unlikely to be paid on time if the government did not get the money from the World Bank and other donors.” (Kanbur, 2000)

Can companies play a role when donors make their aid disbursement decision, and can recipients of foreign assistance make use of such a link? Ravi Kanbur's (2000) experience from Ghana, where the loan tranche was in fact released, indicates that the pressure created by companies towards disbursement may be decisive. Even so, the literature on foreign aid has ignored these forces, and formal modeling of aid conditionality has almost been absent (Drazen, 2000). We develop a model that not only focuses on how companies can influence the donors, but also on how strategic recipients can use this interdependence to withhold contracts to companies to create such company-pressure on conditionality.

Foreign aid has been a major income source for the developing countries, and a typical low-income country now receives around 7-8 % of their GNP in aid (World Bank 1998). Large parts of this assistance are made contingent upon the poor country implementing certain conditions like macroeconomic stabilizing policies. However, even though conditionality is viewed as a necessary instrument for the donor community to

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achieve the goals of aid (Summers and Pritchett 1993, Kanbur 2000), the empirical evidence indicates that conditionality fails (Sachs 1989, World Bank 1992, Mosley et al. 1995, Collier 1997, Dollar and Svensson 2000). When foreign aid is so important to the recipient, why does the recipient not comply with the donor in the face of a cut-off of these recourses? And why does the donor disburse the funds to recipients that do not implement the conditions when conditionality is vital to the donor's goals? This is the puzzle that Kanbur (2000) termed "the weakness of strength": Why are the perceived mighty donors not able to force the perceived weak recipients to implement the conditions?

The limited literature that utilizes formal models to explain the failure of aid conditionality offers some insight into this puzzle.¹ Svensson's (2000) principal-agent model illustrates how altruistic donors end up in the Samaritan's dilemma because the recipient has no incentives to implement conditions to reduce poverty when the amount of aid is determined by the level of poverty. A different approach is taken by Mosley et al. (1995) in which the relationship between the donor and recipient is modeled as a bargaining game. One of their findings is that there will always be some slippage on the conditions, even if the recipient has agreed to their implementation in the first round.

This paper provides a complementary explanation for the failure of conditionality by developing a game-theoretic multi-agent model with a recipient, two donors and two companies, where the influence of private business interests on the donor-recipient relationship can be crucial to the donors' disbursement decision. Most models of foreign aid are dyadic, which means that all the agents interact pairwise. Our model is triadic, which implies that an agent i (the recipient) does not only take account of his relationship

¹ See Drazen (2000) for a survey of the political economy of foreign aid. Principal-agent models that discuss foreign aid include Pedersen (1996) on why it is crucial for the donor to have the first mover advantage if aid is to increase investment, and Pedersen (2002) for an illustration of how adverse incentive effects of aid can cause poverty to increase due to a Samaritan's dilemma problem. Another problem that is often mistakenly taken to be the failure of conditionality, is that aid can be fungible. For fungibility, see for instance Feyzioglu et al. (1996).

with agent j (one donor), but also of his own and agent j 's relationship with a third agent k (one company).² We find that one possible explanation for the “weakness of strength” is that recipients may be able to play different donors out against each other by granting contracts to companies from those donor countries that do not enforce conditionality. This creates incentives for the companies to put pressure on the donor to disburse aid, even when the conditions are not implemented. We show that if it is more important for the donor to maintain a good relationship with the domestic company than to maintain conditionality, the recipient need not implement the conditions to receive aid, and conditionality fails.

The failure of conditionality can only be sustained in our model when we assume triadic interactions. Restricting the agents to traditional pairwise interaction removes the recipient's ability to use the company to put pressure on the donor. We show that this restriction yields the opposite result, namely that conditionality becomes successful because the recipient must implement the conditions to get aid.

Several studies argue that there are asymmetric preferences between the donor and the recipient with regard to the attractiveness of the policy conditions (Mosley et al. 1995, Collier et al. 1997, Dollar and Svensson 2000, Kanbur 2000)³. This divergence of opinion lies at the heart of conditionality. If there were no disagreement between the donor and the recipient on implementation, there would be no need for the donor to threaten to cut off the aid if the recipient did not fulfil the obligations.⁴ Hence, conditionality would be unnecessary because the recipient would implement the conditions anyway. We incorporate conditionality into the model as a way for donors to buy reform or new policies that the

² See Basu (2000) for a discussion of dyads and triads.

³ The controversy over the policy conditions can arise from the potential redistribution from politically important domestic groups that may follow from the implementation of the conditions (Summers and Pritchett, 1993, Mosley et al. 1995)³, or more generally from the cost of exerting effort when implementing the conditions. (Svensson 2000).

⁴ Note that new positions from a donor on conditionality may reflect nothing else than rhetoric if the donor's preferences are not changed. The World Bank's new initiative of making recipients partners in the development strategy is just another emperor without clothes if the bank continues to condition aid on the same policies as before.

recipient would not adhere to in the absence of aid, and let the recipient's implementation be endogenously determined.

One important motive for giving foreign assistance has been to increase economic growth in the recipient country. However, there is some evidence that foreign aid has not contributed to growth (Boone 1996), and that sound macroeconomic policies are necessary for aid to increase growth (Burnside and Dollar 2000). Hence, as emphasized by World Bank (1998), conditioning aid on sound policies is vital for the goals of the donor community because aid may be wasted if the right policies are not in place.

The altruistic "conditionality contributes to growth" argument seems to be the most important motive for contemporary donors setting the recipient's implementation of sound macroeconomic policies as a necessary condition for foreign aid (Summers and Pritchett 1993, Collier et al. 1997).⁵ Hence, we incorporate this motive for donors to maintain conditionality. However, the empirical literature of the determinants of aid points out that many donors also let economic self-interests influence aid disbursement, for instance through tying aid to contracts with companies from the donor country.⁶ So we incorporate both the altruistic conditionality motive and a concern for domestic company interests in the donor's preferences. The latter motive is similar to that for tying aid in that the donor cares about the domestic economic activities in its own country. Even though we assume that donors have an altruistic motive for giving aid, it is necessary to underline that we do not use a Samaritan's dilemma argument for the failure of conditionality.

This paper is organized as follows. The empirical background is presented in section 2, and the model of an extended triadic structure involving one recipient, two donors and

⁵ Collier et al. (1997) also discuss the other motives for conditionality, and see also Hansen and Tarp (2001) for empirical results that indicate that aid increases growth unconditional of "sound" policy.

⁶ On the donors taking into account their self-interests when acting on the aid scene, see the empirical work of Alesina and Dollar (2000), Burnside and Dollar (2000) and Trumbull and Wall (1994). For a model where a selfish donor uses aid to lower trade tariffs, see Lahiri et al. (2002).

two northern companies is presented in section 3. A few tentative policy implications are discussed in section 4, and section 5 provides some concluding remarks.

2. Empirical background of triads

Ravi Kanbur's (2000) experience of a third party (a company) influencing the relationship between two agents (the donor and the recipient) is a typical example of a triadic relationship, and is a similar structure of influence to what others have found. It is evident, as Basu (2000) notes, that triadic relations occur in interactions at the international level, especially in situations where sanctioning is an issue. Basu illustrates the necessity of using the triadic structure to analyze such sanctions by the US Helms-Burton Act of 1996. The US is not only penalizing Cuba by a trade embargo in an usual dyadic relationship, but the intent of the Helms-Burton Act is also to penalize any third party, company or country, that does business with Cuba.

Another example of how three-party relationships develop on the international arena can be traced to the previous struggle between communism and capitalism. During the cold war, it was evident that recipients of foreign aid used this political rivalry between the ideologies to play the great powers out against each other in order to extract maximum benefits from the two main rivals. It was common knowledge that if the necessary amounts of aid were not provided from one of the sides, the recipient could turn to the other side, and hence, adhere to the opposite ideology. In US's own words regarding African countries:

"U.S. policymakers focused on strengthening African ties to the West and on providing sufficient U.S. aid to the countries of Africa so that the alternative of turning to the Soviet bloc would seem less attractive."⁷

⁷ US Department of State Publication (1999).

Such turnover may have induced a loss for the power that lost its supporter because of the importance of retaining the spread of the other power's ideology. If this was the case, then the recipient could have employed a strategy where it asked one power for more aid and at the same time "accidentally" revealed an interest in the other power's ideology. This could have induced the first power to grant more aid in order to keep the recipient on their side in the "battle".

An interesting example of a triadic relationship is given by an earlier loan officer in an American bank (Gwynne, 1983). The loan officer participated in the process of giving a ten million dollars loan to a Philippine construction company, which was technically bankrupt. The company had a leverage ratio of seven to one, so the debt was so large compared to the equity that no bank would normally grant a loan. Despite its knowledge of the huge leverage ratio, the bank granted the loan. The reason was that the loan was to be used to purchase equipment from an American company, which was also a long-standing client of the bank. The American company put pressure on the loan officer to grant the loan so they could get the contract with the Philippine company. The bank gave in to the pressure due to the fact that the American company had large demand deposits and pension funds deposited in the bank. The relations were so important that even the president of the bank intervened to get the loan disbursed. Hence, the loan was granted because of the American company's influence on what was supposed to be an ordinary dyadic relationship between the bank and the Philippine company.

The principle behind a strategy of making a company influence one's business partner can be useful for a recipient in contemporary aid relations. Kanbur's (2000) experience from Ghana indicate that the pressure from companies on the donor can be crucial in explaining the failure of conditionality. We know from the literature on tied aid that there exist strong relationships between bilateral donors and companies from the donor

countries. Hence, we restrict our analysis to bilateral donors because we believe that the largest opportunities for company influence can be found in these relations. The multi-agent triadic model in the next section formalizes these relations.

Section 3 starts by explaining the main argument in a simple 3-player context, and goes on to specify the payoff functions (section 3.1) in order to analyze the game when more donors and companies are included (section 3.2). To show that the triadic structure is crucial for these results, we make a comparison with the dyadic modeling of the same relationships (section 3.3), before turning to a discussion of the properties of the contract underlying the analysis (sections 3.4 and 3.5).

3. The model

Consider a model with one recipient and N donor-company pairs where each company has its headquarters in one of the donor countries. Let Donor_i and Company_i denote the donor and the company in country i . We assume that each donor adheres to conditionality, so they specify some conditions that the recipient must implement initially in order to be entitled to receive aid. Then, in line with the empirical findings on the disagreement on the conditions, we have a strategic, maximizing recipient who is not in favor of these conditions and who would thus try to get the aid without implementing the conditions.

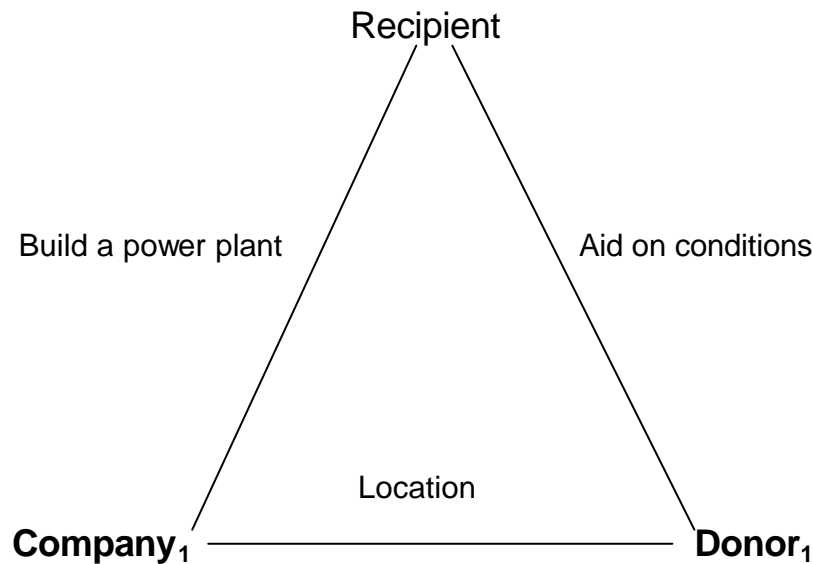
In this model, the recipient is going to build a power plant. Let the size of this investment be exogenously given and denoted I . All the companies are interested in having this project, and the recipient must decide to which company it will give the contract.

As we know from the literature on tied aid, each company has a close relationship with the government in the country where the particular company's headquarters are located. Due to the non-transparency of such relationships, we could treat the company-donor relationship as a black box and just assume that the company is able to influence its donor. However, to visualize the influence, we assume that the company must decide on

locating some new activities, and can either locate them in the country where it has its headquarters, or abroad. Company_i's location decision is important for Donor_i's domestic interests, and assumed to be independent of whether or not Company_i gets a share of the power plant contract.

All players realize that there is an opportunity for the recipient to utilize the companies' influence over the donors to get aid without implementing the conditions. To illustrate this argument, assume first that $N = 1$. The relationships are illustrated in figure 1:

Fig. 1. The triadic relationship when $N = 1$.



Let the recipient be indifferent to whether Company₁ or some other company builds the plant, and assume that this “other company” does not have any relations with the other agents. Assume further that the recipient acts according to the following “weak reciprocity” rule:

The recipient will give the construction-assignment to some other company if Company₁ does not locate abroad in a situation where Donor₁ does not disburse aid. Otherwise, Company₁ gets the contract.

We term this rule “weak reciprocity” because it specifies that if the recipient is indifferent between two actions, it will choose the action with the worst result for the company if the company does not comply with the recipient’s aim of punishing the donor for not giving aid. We will return to this rule and its empirical foundations, but first we illustrate how the recipient can use the contract allocation to secure aid without implementing the conditions.

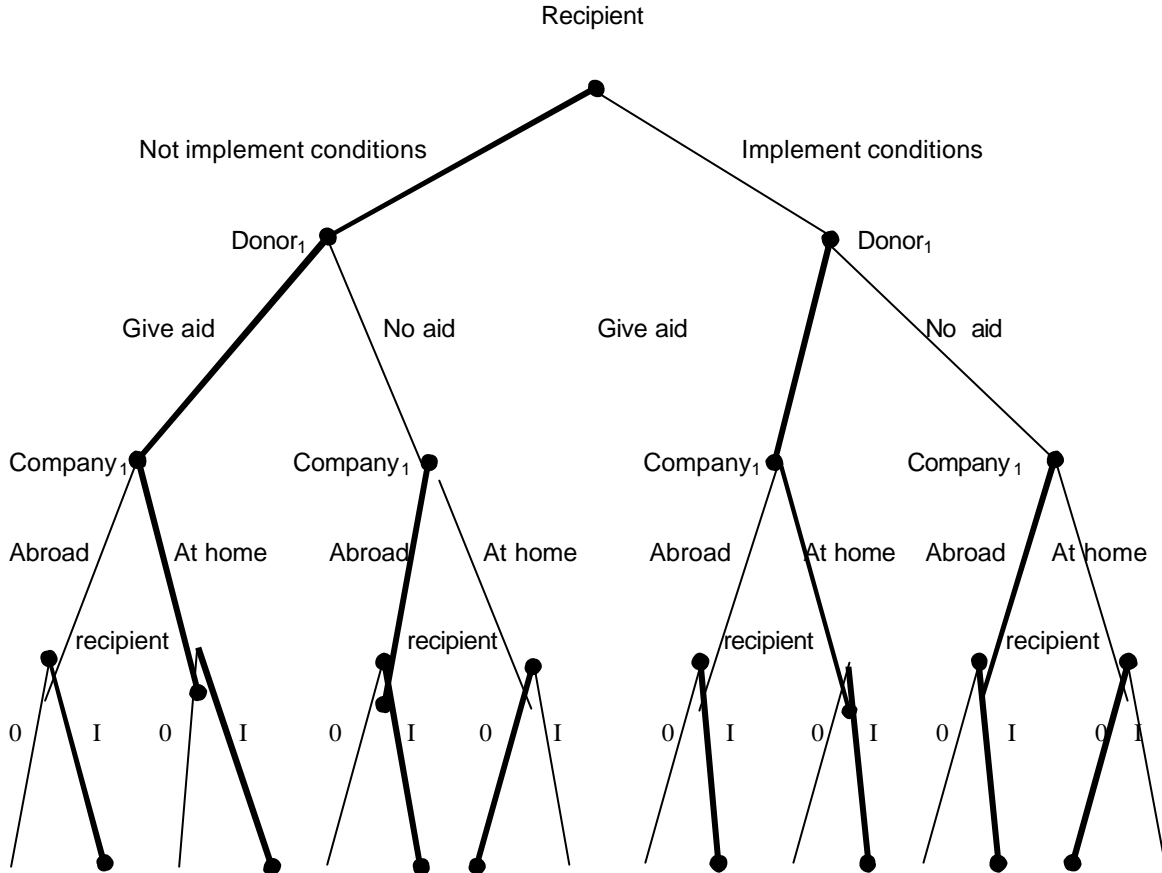
Take as a starting point that the recipient does not implement the conditions. If Donor₁ maintains conditionality and hence does not give aid, then the recipient’s contract-rule creates incentives for Company₁ to locate abroad. This illustrates our main point: Company₁ has incentives to influence Donor₁ to disburse aid when the conditions are not implemented. Further, make the following two assumptions which are necessary for the recipient to be able to get aid without implementing the conditions in this setting. First, the contract is worth more to Company₁ than locating abroad, i.e. the company will actually locate abroad to secure the contract if the donor does not disburse aid. Second, the concern for domestic business is more important than conditionality for the donor, i.e. if the donor must choose between maintaining conditionality and losing some valuable activities to another country, then aid will be disbursed.

The interaction between these agents is typically sequential. In line with the principle of conditionality in the donor-recipient relationship, we assume that the recipient has the first-mover advantage.⁸ So, at stage one, the recipient decides whether or not to

⁸ Conditionality as practiced in contemporary donor policy implies that the donor awaits the recipient’s implementation before taking the disbursement decision, the so-called performance-based aid. As the history of conditionality shows, the recipient would never implement controversial conditions if the donor was to take this decision before the recipient’s eventual implementation (Collier et al. 1997). Hence, recipients are usually modeled as Stackelberger leaders, see for instance Pedersen (1996), Svensson (2000) and Hagen (2001).

implement the pre-determined conditions specified by Donor_1 . At stage two, Donor_1 decides to disburse the aid or not, and, at stage three, Company_1 decides on location. Finally, at stage four, the recipient decides whether to give the contract to Company_1 or to some other company. By backward induction in a game with this structure played once, it is straightforward to show that the recipient refuses to implement the conditions and that Donor_1 disburses aid, given the two conditions from the previous paragraph and the recipient's weak reciprocity rule. Figure 2 displays the game tree.

Figure 2: The game-tree for the triadic game for $N=1$.



The result is dependent on the recipient adhering to its own rule of giving the contract to another company if Company_1 does not locate abroad if Donor_1 rejects disbursement of aid, even if the recipient is indifferent to who builds the plant. Under our assumptions, the contract-allotting rule secures that Company_1 will punish Donor_1 by locating abroad in case aid is not disbursed. This is because Company_1 will lose the contract if it does not punish the donor.

This assumption of weak reciprocity is anchored in an increasing empirical literature on the importance attached to the process that generates economic results. In

experimental economics, one frequent finding is that people are inclined to punish those who do not cooperate, even if this punishment does not imply higher payoff in subsequent periods (as with trigger strategies in repeated games). Moreover, experiments indicate that many individuals are willing to take on a cost in order to punish non-cooperators, even if this does not lead to a higher payoff in subsequent periods (Fehr and Gächter 2000, Ostrom, Walker and Gardener 1992).

In particular, experiments with “ultimatum games”⁹ reveal that substantial positive offers are turned down. Proposals of less than 20% in these games are often rejected (Güth and Tietz 1990, Roth, Prasnikar, Okuno-Fujiwara and Zamir 1991, Camerer and Thaler 1995, Henrich 2000), which implies that people are willing to lose 20% of the money in the game as long as the player that proposed the “unfair” share gets nothing.¹⁰ Bowles and Gintis (2000) interpret these results as reflecting “strong reciprocity”: a behavioral rule to reward cooperators and punish those who deviate from norms of acceptable behavior. Our assumption of weak reciprocity does not go as far as implying that one is willing to incur a net cost of punishing. Rather, weak reciprocity merely implies that a player who is indifferent between two actions chooses the action that gives the worst outcome for the deviator and best outcome for the cooperator.

Before we set up the formal conditions for the subgame perfect equilibrium of the more general game in section 3.2, it is necessary to specify the payoff functions for the agents.

⁹ In an ultimatum game, two players (usually unknown to each other) decide on how to share an amount of money between them. One is chosen to propose a share, the “proposer”, and the other one, the “responder” decides on whether or not to accept that share. If accepted, the proposed share is allotted to the responder while the proposer will have the remainder. But if the offer is rejected, neither of the players get anything.

¹⁰ Low offers are often perceived as “unfair” by both the proposer and the responder, see for example Henrich’s (2000) interviews of the players in Los Angeles and Machiguenga, Peru.

3.1 Payoff functions

Donor_{*i*} is interested in granting the recipient conditional aid of size a_i . Assume that the parliament in the donor country determines the aid budget so that $a_i > 0$ is exogenously given. Let a be the vector that represents all the donors' different amounts of aid; $a = (a_1, a_2, \dots, a_N)$. The superscript of a indicates whether or not aid is disbursed, so let a_i^{gra} and a_i^{not} denote that Donor_{*i*} grants or does not grant aid, respectively, and a^{gra} and a^{not} that every donor's aid is disbursed or not disbursed. Donor_{*i*} adheres to conditionality, and thus operates with some pre-specified conditions, c_i . Let c be the vector of conditions for all donors; $c = (c_1, c_2, \dots, c_N)$. Then c_i^{imp} denotes the event that the recipient implements Donor_{*i*}'s conditions, and c_i^{not} the opposite. Finally, let c^{imp} and c^{not} denote that every donor's conditions are implemented or not implemented, respectively. For simplicity, and to facilitate the comparison between the dyadic and the triadic equilibrium below, assume that c_i is different from c_j so that each donor has its own conditions.¹¹ For example, one donor conditions aid on trade liberalization, one on fiscal deficit, one on military expenditures, one on health expenditures and so on. Assume also that each donor's conditions are not conflicting with any of the other donors' conditions.

The close relationship between the company and the donor within the same country, that is, between Donor_{*i*} and Company_{*i*}, can also be specified. The important assumption is that Company_{*i*} can make decisions that are important to Donor_{*i*}. For illustrative purposes, however, assume that Company_{*i*} is willing to use location of some new activities as a potential means to influence Donor_{*i*}. If s_i denotes Company_{*i*}'s size of activities in Donor_{*i*}'s country, then let s_i^* be the optimal size, and let $s_i'' < s_i^*$ denote the size of Company_{*i*}'s activities if it does not locate the new activities to country i . Let I_i denote Company_{*i*}'s share

¹¹ It is evident from the analysis below that the results do not depend on whether or not the donors have overlapping conditions.

of the construction contract I . Thus, if I is divided equally among the N companies, then $I_i = \frac{I}{N}$. Then if Company _{i} does not get a share of the contract, $I_i = 0$.

The recipient's utility function can be expressed as

$$(1) \quad R = R(I, c, a)$$

where the recipient's utility is an increasing function in the amount of aid. The recipient also derives a positive utility of having the plant built, but is indifferent as to which company gets what share of the contract. However, the recipient must decide to which company the contract is to be assigned. Since the recipient is trying to avoid implementing the conditions, it will apply the following rule:

(2) *If $M < N$ donor-company pair chooses (no aid, home): divide the contract among the other companies.*

For all other histories: divide the contract equally among all companies.

Since conditionality implies that aid is used to buy policy reform, we assume, ceteris paribus, that the recipient requires a certain amount of aid to be willing to implement the conditions c_i , and that a_i is larger than this amount.¹² Hence,

$$(3) \quad R(I, c_i^{imp}, c_{-i}^t, a_i^{gra}, a_{-i}^p) > R(I, c_i^{not}, c_{-i}^t, a_i^{not}, a_{-i}^p) \quad , \quad t = imp, not, \quad p = gra, not, \quad \forall i$$

¹² For empirical evidence on conditionality being imposed on unwilling recipients, see Mosley et al (1995) and Kanbur (2000). There are several reasons for such a disagreement, but the most cited is that implementation of the conditions would harm politically important groups in the recipient country, for instance through a change in relative prices as noted in Summers and Pritchett (1993).

where c_{-i}^t and a_{-i}^p denotes the conditions and aid, respectively, for other donors than Donor_i.

$$(4) \quad D_i = D_i(a_i, c_i, s_i)$$

where, for the sake of simplicity, we assume that D_i is a differentiable function in a_i . We assume that Donor_i has an increasing utility of granting aid if the recipient has implemented c_i , that is, Donor_i's own conditions. To simplify the disposition, it is assumed that Donor_i is indifferent to other donors' grants as well as to whether or not the recipient implements the other donors' conditions. Incorporating Burnside and Dollar's (2000) findings that giving aid is a waste if the conditions are not implemented, Donor_i is assumed to have a decreasing utility of granting aid if the recipient has abstained from implementation. In sum

$$(5) \quad \frac{\partial D_i}{\partial a_i} \begin{cases} > 0 & \text{if } c_i = c_i^{imp} \\ < 0 & \text{if } c_i = c_i^{not} \end{cases}$$

Donor_i is also better off when the recipient implements c_i , everything else equal, hence

$$(6) \quad D_i(a_i, c_i^{imp}, s_i) > D_i(a_i, c_i^{not}, s_i) \quad , \quad \forall i$$

Then (5) and (6) formalize conditionality, and implies that the donor would, *ceteris paribus*, only give aid to a recipient that has implemented this donor's conditions. We also assume that Donor_i's utility increases with Company_i's activity in country i , and is also more concerned about this domestic activity of Company_i than about maintaining conditionality. Therefore, in a situation where the conditions are not implemented, Donor_i would grant the

aid to the recipient if the consequence of not disbursing the aid would be to lose the new activity $(s^* - s^u)$ to another country. Thus, we assume that

$$(7) \quad D_i(a_i^{gra}, c_i^{not}, s_i^*) > D_i(a_i^{not}, c_i^{not}, s_i^u) \quad , \quad \forall i$$

If C_i denotes Company_{*i*}'s profit, then

$$(8) \quad C_i = C_i(I_i, s_i)$$

We assume that each company maximizes profit, is risk neutral and has an increasing profit in the size of its share of the contract. Thus, the larger the number of companies which are to divide the contract, the lower the profit to Company_{*i*}:

$$(9) \quad \frac{\partial C_i(I_i, s_i)}{\partial I_i} > 0 \quad , \quad \forall i$$

Note that, by definition, $C_i(I/N, s_i^*) > C_i(I/N, s_i^u)$. Assume now that N^{max} is the number of companies for which Company_{*i*} is indifferent between making a location decision that is not optimal if, as a result, it receives $\frac{1}{N^{max}}$ of the contract, rather than choosing an optimal location and be disqualified from any participation in the project. Hence, N^{max} is defined by

$$(10) \quad C_i\left(\frac{I}{N^{max}}, s^u\right) = C_i(0, s^*) \quad , \quad \forall i$$

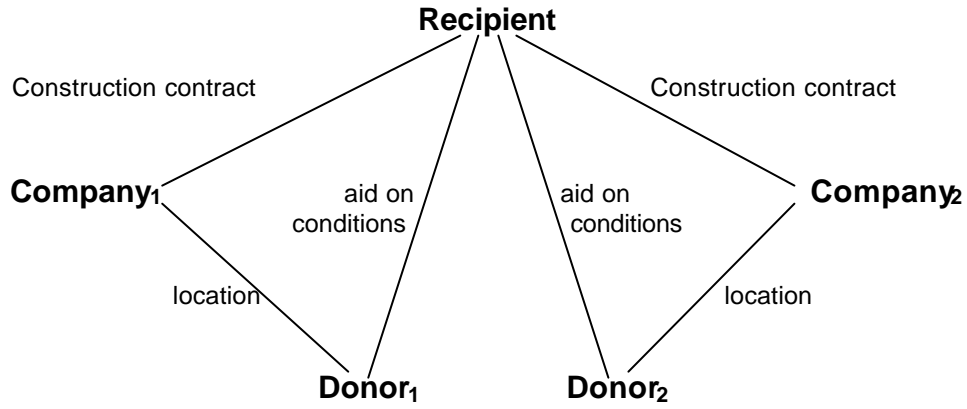
Finally, assume that the company would rather locate abroad to secure the entire contract compared to locating at home and having $\frac{1}{N}$ of the contract:

$$(11) \quad C_i\left(\frac{I}{N}, s^*\right) < C_i(I, s'') \quad , \quad \forall i, \quad N \geq 2$$

3.2 Subgame perfect equilibria in triadic relations

Assume now that $N = 2$ and that $N^{\max} > 2$, which gives the potential interactions among the agents as depicted in figure 3 below (see the appendix for the general case).

Fig. 3: Structure of the potential interaction among the players for $N = 2$.



Now, let Company_i said to be cooperating with the recipient if it locates abroad in the case that Donor_i does not give aid, and not to be cooperating if it locates at home in this situation. From the recipient's contract-allotting rule (2), all players know that the company that cooperates with the recipient will secure at least half of the contract. Moreover, the company that cooperates will have the entire contract if the other company does not cooperate. So if both donors refuse to give aid, we have a 'prisoner's dilemma' between the two companies where each company has incentives to cooperate with the recipient irrespective of whether or not the other company cooperates. To see that these incentives

induce the donors to disburse aid even if the conditions are not implemented, we solve the game by backward induction following the specified sequence of the game.

Stage 4

From (2), the recipient will choose to give the entire contract to Company₁ (Company₂) if Donor₂ (Donor₁) has refused to give aid at stage 2 and Company₂ (Company₁) has not located abroad, as long as Company₁ (Company₂) and Donor₁ (Donor₂) has not chosen the same actions: (no aid, home). All other histories in this game will imply that each company will have $\frac{I}{2}$ of the contract.

Stage 3

Contingent upon the actions at stage 2, the following games represent the companies' interaction at stage 3:

A) Both donors have refused to give aid at stage 2.

Then Company_{*i*} will have half of the contract if it takes on the cost of locating abroad and the other company does the same. In that case both will get $C_i(I/2, s'')$. If one company locates abroad and the other does not, then the one that cooperates with the recipient will get the whole contract and thus have $C_i(I, s'')$, while the other's payoff will be $C_i(0, s^*)$. If both companies refuse to cooperate with the recipient and locate at home, then the recipient divides the contract between them yielding $I/2$ to each. Formally:

		Company 2	
		Abroad	Home
Company 1	Abroad	$C_1(I/2, s'') , C_2(I/2, s'')$	$C_1(I, s'') , C_2(0, s^*)$
	Home	$C_1(0, s^*) , C_2(I, s'')$	$C_1(I/2, s^*) , C_2(I/2, s^*)$

From (9), (10) and the fact that $N^{\max} > 2$, we know that $C_i(\frac{I}{2}, s'') > C_i(0, s^*)$, and from (11) that $C_i(I, s'') > C_i(\frac{I}{2}, s^*)$. Thus, if both donors have rejected disbursement of aid, then the companies play (at stage 3) a variant of the “prisoner’s dilemma” game with one unique Nash equilibrium where both companies choose to locate abroad and thus cooperate with the recipient.

B) Only one donor has refused to give aid at stage 2.

Assume now that Donor₁ has rejected disbursement of aid at stage 2, and that Donor₂ has disbursed aid. According to (2), the recipient will give the entire contract to Company₂ if Company₁ locates at home in this situation, which would yield $C_1(0, s^*)$ to Company₁ and $C_2(I, s^*)$ to Company₂ if it locates at home and $C_2(I, s'')$ if it locates abroad. Note also that the recipient divides the contract equally between them if both locate abroad. The companies hence play the following game:

		Company 2	
		Abroad	Home
Company 1	Abroad	$C_1(I/2, s'') , C_2(I/2, s'')$	$C_1(I/2, s'') , C_2(I/2, s^*)$
	Home	$C_1(0, s^*) , C_2(I, s'')$	$C_1(0, s^*) , C_2(I, s^*)$

In the unique Nash equilibrium of this game, Company₁ locates abroad to secure half of the contract (and Company₂ locates at home). Thus, Donor₁ is punished for not giving aid. Note also that symmetry implies that if Donor₁ gives aid while Donor₂ does not, then we will have that Company₂ punishes Donor₂ in the Nash equilibrium.

C) Both donors give aid

In this case, both companies will get half of the contract each, irrespective of their choices (from (2)). Thus, the following game is played in this situation:

		Company 2	
		Abroad	Home
Company 1	Abroad	$C_1(I/2, s'') , C_2(I/2, s'')$	$C_1(I/2, s'') , C_2(I/2, s^*)$
	Home	$C_1(I/2, s^*) , C_2(I/2, s'')$	$C_1(I/2, s^*) , C_2(I/2, s^*)$

In this case both companies choose to locate at home.

In sum, we know from the analysis of stage 3 that donors not disbursing aid will be punished. Thus, each donor's best response at stage 2 is to give aid (see (7)), no matter what the other donor does and irrespective of the recipient's implementation record at stage 1. Then it follows that the recipient will not implement any conditions at stage 1, and still be sure of having the aid from both donors.

From this elaboration, we have that if the players have the following strategies:

- the recipient's strategy* is to play "not implement" at stage 1, and follow the weak reciprocity rule when giving the contract(s) at stage 4.
- Donor_i's strategy* is to always play "give aid" at stage 2.
- Company_i's strategy* is to play, at stage 3, "at home" if the donor gives aid, and "abroad" if the donor plays "no aid"

then these strategies yield a subgame perfect equilibrium under our assumptions.

It is evident that any deviation from any single agent from its strategy would lead to a worse outcome for the deviating agent. Hence, conditionality fails in the subgame perfect equilibrium, and the recipient is able to get the aid without implementing the conditions by making the companies put pressure on the donors towards disbursement. Note that the result can be maintained even if we assume a larger number of donor-company pairs, see the appendix for a discussion.

3.3 The dyadic outcome

To see that the triadic structure is crucial in this explanation for the failure of conditionality, assume that the players only are allowed to interact pair-wise. Hence, we remove the "weak reciprocity" assumption in (2) since this rule is triadic by definition. Recall that

conditionality should be maintained from Donor_i's point of view. Thus, from (5) and (6) we know that aid is only disbursed in an isolated recipient-donor interaction as long as the conditions are implemented. Then from (3) we know that the recipient will implement the conditions to get aid in such a two-party relationship.

However, we must also take account of the recipient's relationship with the company. Since the recipient does not let the donor-company relationships affect its decisions in dyadic relations, the recipient is indifferent to any division of the contract among the companies. The contract can thus be seen as randomly allotted. Then there will be no gain for Company_i from influencing Donor_i, and Company_i locates at home. Thus, the recipient's relationship with the company will not influence the interaction between the recipient and the donor, so the recipient implements the conditions c_i to get aid a_i , for all i .

It is evident that conditionality becomes successful in the dyadic game. Compared to the triadic equilibrium, the donors are better off because conditionality works as intended, which in turn implies that the recipient is worse off. Donor_i achieves $D(a_i^{gra}, c_i^{imp}, s_i^*)$ in the dyadic equilibrium, which is clearly better than receiving $D(a_i^{gra}, c_i^{not}, s_i^*)$ from the triadic outcome. Since the donor believes that giving aid when the conditions are not implemented is a waste, the donor is actually taking a loss in the triadic equilibrium compared to the situation where the recipient is not able to use the companies in a strategic manner. The donor is forced to take this loss because not giving aid causes a larger loss when the company punishes the donor in order to secure a share of the construction contract. The recipient will have $R(I, c^{imp}, a^{gra})$ in the dyadic game, but is better off in the triadic equilibrium because it avoids implementing the conditions: $R(I, c^{not}, a^{gra})$. The payoff to the companies depends on the allocation of the contract and the difference between the dyadic and triadic company-payoff is therefore undetermined.

Since the opportunity to divide the contract between the companies plays an important role in these games, it is necessary to raise the issue of the nature of the marginal costs of splitting a contract among different entrepreneurs. In the analysis in the previous sections, we have assumed that there are no costs for the recipient of letting more companies share the contract. As there could be both decreasing and increasing costs for the recipient, dependent on the type of project that is contracted, this assumption needs to be explored further. This is the topic of the next two sections.

3.4 Increasing costs of splitting the contract

When various tasks within a construction project are complicated to coordinate, or for capital investments with large start-up costs, there may be increasing costs of granting different parts of the project to several different entrepreneurs. The more coordination needed between the different parties (or the larger the start-up costs) that would have been avoided if a single entrepreneur were given the entire enterprise, the larger the costs for the recipient of letting more companies have a share of the contract. To analyze the implication for the triadic equilibrium, suppose that we change the triadic game in sections 3.1 and 3.2 so that the costs are increasing in the number of companies that get a share of the contract.

It is evident that increasing costs in the number of entrepreneurs that undertake the project make it optimal for the recipient to give the entire contract to one single company. In the situation with N company-donor pairs, assume then that the recipient's contract allotting rule is changed to

- (12) *If $M < N$ donor-company pair choose (no aid, home): assign the contract randomly to one of the other companies.*
- For all other histories: assign the contract randomly to one of the N companies.*

Hence, the recipient still adheres to a weak reciprocity rule in that it will punish the companies that does not cooperate if it can do this at no cost.¹³ The main difference from the elaboration in section 3.2 lies in the uncertainty with regard to the reward to the company for punishing the donor. If Donor_i does not disburse aid, then Company_i is not certain of being paid for locating abroad. Company_i will only be entitled to the possibility of being allotted the contract if it cooperates with the recipient. Working backwards for $N=2$ gives the following result:

Stage 4

From (12), the recipient will give the contract to Company_j if Donor_i has refused to give aid at stage 2 and Company_i has located at home, as long as Company_j and Donor_j did not choose equal actions; (*no aid, home*). All other histories in this game will imply that each company has a fifty percent chance of winning the contract.

Stage 3

Contingent upon the actions at stage 2, the following games represent the companies' interaction at stage 3:

A) Both donors have refused to give aid at stage 2.

Then Company_i will have a fifty percent chance of having the contract if it takes on the cost of locating abroad in a situation where the other company does the same. In that case, both will get an expected payoff of $E[C_i^b] = \frac{1}{2}C_i(I, s^u) + \frac{1}{2}C_i(0, s^u)$. If one company locates abroad and the other does not, then the one that cooperates with the recipient will get the

¹³ Recall that Company_i is not cooperating if it does not locate abroad if Donor_i does not give aid, and cooperating in all other circumstances.

whole contract and thus achieve $C_i(I, s^u)$, while the other will get $C_i(0, s^*)$. If both companies refuse to cooperate with the recipient and locate at home, then the recipient grants the contract randomly, which yields an expected payoff $E[C_i^a] = \frac{1}{2}C_i(I, s^*) + \frac{1}{2}C_i(0, s^*)$ to each. Formally:

		Company 2	
		Abroad	Home
Company 1	Abroad	$E[C_1^b], E[C_2^b]$	$C_1(I, s^u), C_2(0, s^*)$
	Home	$C_1(0, s^*), C_2(I, s^u)$	$E[C_1^a], E[C_1^a]$

Then we impose this section's parallel to condition (10) in section 3.1. Each company's expected payoff from moving abroad and having a ticket to the contract lottery must be higher than the payoff of locating at home and be certain of not having the contract. Thus,

$$(13) \quad E[C_i^b] > C_i(0, s^*)$$

Further, if both companies choose to ignore the recipient's demands and locate at home, then both will have a fifty percent chance of having the contract. However, if one of the companies locates abroad while the other does not, then the former company will have the contract with certainty. Hence, if

$$(14) \quad E[C_i^a] < C_i(I, s^u)$$

is satisfied, then we have the same type of prisoner's dilemma game as in section 3.2. Thus, assume that both (13) and (14) are satisfied and let them replace (10) and (11). Then both companies locate abroad if both donors reject disbursement of aid.

B) Only one donor has refused to give aid at stage 2.

Assume now that Donor₁ has rejected disbursement of aid at stage 2, and that Donor₂ has granted aid. According to (12), the recipient will give the contract to Company₂ if Company₁ locates at home in this situation, which would yield $C_1(0, s^*)$ to Company₁ and $C_2(I_2, s^*)$ to Company₂ if it locates at home and $C_2(I_2, s'')$ if it locates abroad. Note also that each company has a fifty percent chance of having the contract if both locate abroad. The companies hence play the following game:

		Company 2	
		Abroad	Home
Company 1	Abroad	$E[C_1^b] , E[C_2^b]$	$E[C_1^b] , E[C_2^a]$
	Home	$C_1(0, s^*) , C_2(I_2, s'')$	$C_1(0, s^*) , C_2(I_2, s^*)$

Since (12) is assumed, Company₁ locates abroad to secure the possibility of having the contract. Company₂'s best response is to locate at home, and hence, both have a fifty percent chance of having the contract. Then Donor₁ is punished for not giving aid, while Donor₂ is rewarded for giving aid by having the location to its own country. Note

also that symmetry implies that if Donor₂ does not give aid while Donor₁ does, then we will have that Company₂ punishes Donor₂.

C) Both donors give aid

In this case, both companies have fifty percent chance of having the contract irrespective of their choices (from (12)). Thus, we know from section 3.2 that both companies choose to locate at home.

The crucial point in the analysis is that Company_{*i*} will locate abroad if Donor_{*i*} does not disburse aid. Thus, the remaining stages of this game are identical to section 3.2, so both donors will give aid even if the recipient does not implement any conditions. The equilibrium path is then that the recipient start out by not implementing the conditions at stage 1, both donors give aid at stage 2, both companies locate at home at stage 3, and the contract is randomly assigned to one of the companies at stage 4.

3.5 Decreasing costs of splitting the contract

Some types of construction work can be more effectively accomplished by dividing the work among different companies, at least up to a certain number of entrepreneurs. Assume now that there are decreasing costs of dividing the contract among the companies. In this situation, it is optimal for the recipient at stage 4 to grant an equal share of the project $\frac{1}{N}$ to each of the companies. This can be interpreted as there being a cost for the recipient of denying one company a share of the contract. Hence, at stage 4, the recipient will choose to divide the construction project equally among the companies to minimize the costs, irrespective of previous actions of any other player. Then no company will profit from putting pressure on the donor, and Company_{*i*} will always choose to locate in country *i*.

Since there is no pressure towards disbursement, we know from section 3.3 that Donor_{*i*} will grant aid at stage 2 only if the recipient has implemented the conditions c_i . The recipient will therefore implement the conditions at the first stage to secure aid. Declining costs in the number of entrepreneurs that undertake the project imply that the recipient is not able to influence the companies to put pressure on the donors towards disbursement. Hence, conditionality becomes successful.¹⁴

4. Discussion

Several studies have found that bilateral donors frequently direct aid to particular countries based on strategic considerations. Examples of such donor-recipient bindings can be French support to the earlier French colonies, US assistance to Egypt and Israel and Japan's favoring of countries that have the same UN voting pattern as themselves. Such bindings have received criticism, mainly because there are no incentives for the poor country to reform when aid keeps flowing irrespective of the recipient's policies (Alesina and Dollar, 2000, Collier and Dollar 2002). It is argued that one should have no pre-determined recipients of aid, and identify the reformers *ex ante*, so that aid can be granted based on earlier achievements.

There are several reasons for these bindings, and Alesina and Dollar (2000) suggest that the most important one seems to be strategic interests in foreign policy, colonial past and commitment to help the poorest countries. However, our model offers a different interpretation for the rationale of these bindings. In some cases it would be in the donor's own interest to keep aid flowing to a poor country because of the potential loss that may

¹⁴ However, we know from Villanger (2002) that for $N=1$ the recipient is able to get aid without implementing the conditions when there are costs of punishing the company if we allow the game to be repeated in infinitely and if the recipient offers a favorable contract. In our game, when $N=2$, the recipient could offer both the companies a contract that is better than the market based contract only if they put pressure on the donor in the donor specific punishment path, and the ordinary contract if they do not. Due to the usual constraints, however, elaboration on this idea must be left for future research.

arise if domestic companies are disqualified from contracts with the recipient. In this situation the standard recommendations of channeling aid towards good reformists (see Burnside and Dollar 2000, Alesina and Dollar 2000, Collier and Dollar 2002) would not be desirable from the *donor's* point of view: The donor is locked into the triadic relationship with this particular recipient, not because of characteristics of the recipient, but because of the important role of the companies. Selectivity, or switching aid towards other recipients based on their policy record, can be interpreted in our model as the donor refusing to disburse aid. Hence, in our model selectivity does not make a difference because the donor's problem remains the same.

Our model is consistent both with regard to the evidence that aid is granted independently of implementation record of the recipients (failure of conditionality), and to the findings that particular donor countries support particular recipients. Note however, that any deeper study of the empirical basis for our model needs to take into consideration the strained relationships between the donor and recipients if such triadic pressure is employed. The difference between this kind of triadic extortion and blackmail seems not very clear, so careful qualitative empirical work seems warranted.

Other work on foreign aid has argued that one solution to the failure of conditionality is to introduce recipient tournaments (Svensson 2002). Tournaments would imply that the recipient that goes the furthest in implementing the conditions would get most aid. Following this line of thinking we could introduce a second recipient with the same interests, investment project and relationship to the other parties as the original recipient, and assume that each donor is free to choose any allocation of its aid budget between the two recipients. In our framework, this may result in a tug of war between the recipient and the donor that might be studied in a bargaining model. This line of reasoning, however, must be left to future research.

5. Conclusion

This paper has examined how recipients can influence companies to put pressure on donors to disburse foreign assistance without implementing the conditions usually set for the grant. Others have explained the failure of aid conditionality by showing how time-inconsistencies in foreign aid make commitment to conditionality impossible for altruistic donors. Our analysis suggests that conditionality may also fail when recipients strategically allocate contracts only to companies from countries that disburse aid. In order to secure contracts with the recipient, the companies will then use their power to create a pressure on the donors towards disbursement. If the donor is more concerned with its domestic industries (i.e. the consequences of not giving aid in this environment) than conditionality, then the recipient's strategic selection of companies to undertake projects may cause the donor to give assistance even if the recipient does not implement the conditions. In contrast to earlier work, this is a time-consistent explanation for the failure, and does not depend on the altruism of donors.

Since donors believe it is a waste to give aid when the conditions attached to this assistance are not implemented, we find that the donor is forced to take a loss when subjected to this type of strategic behavior. Hence, the donor would be better off never to involve itself in the aid-relationship, and one would expect that real-life donors would withdraw from the aid scene, at least over time. Donors subjected to such strategic behavior may change their preferences and be less interested in the recipient's country, and this is consistent with the trend of reductions in the aggregate amount of foreign aid.

Appendix A. Equilibrium when $N > 2$

The backward induction for $N \in \langle 2, N^{\max} \rangle$, is as follows:

Stage 4

From (2), for any i , the recipient will not give any share of the contract to Company _{i} if Donor _{i} has refused to give aid at stage 2 and Company _{i} has located at home, as long as at least one other donor-company pair has taken other actions than (*no aid, home*). All other histories in this game will imply that the contract will be divided among N companies, which implies that Company _{i} will have $\frac{I}{N}$ of the contract.

Stage 3

Contingent upon the actions at stage 2, the following games represent the companies' interaction at stage 3:

(A) All donors have refused to give aid at stage 2.

To consider Company _{i} 's choice, assume that $M \in \langle 0, N-1 \rangle$ companies locate abroad. Then joining the M companies and locating abroad results in $C_i(\frac{I}{M+1}, s'')$ to Company _{i} , while locating at home yields $C_i(0, s^*)$. From (10) we have that $C_i(\frac{I}{M+1}, s'') > C_i(0, s^*)$ since $M \leq N-1 < N^{\max}$, so Company _{i} locates abroad. To see that this is also the case when all companies has located at home, assume that $M=0$. Then Company _{i} will have the entire contract by locating abroad, which results in $C_i(I, s'')$. By locating at home in this situation, all companies will share the contract, which yields $C_i(\frac{I}{N}, s^*)$. From (11), $C_i(I, s'') > C_i(\frac{I}{N}, s^*)$, which implies that Company _{i} locates abroad even if all other companies has located at home. Thus, we

have a prisoner's dilemma structure where it is always better for Company_i to locate abroad if all donors have refused to disburse aid, irrespective of the other companies' choices.

(B) If $M \leq N - 1$ donors have refused to give aid at stage 2.

Scenario 1: Donor_i is among the M donors that have rejected disbursement of aid.

Assume that $\hat{M} \in [0, M - 1]$ companies from the countries that refused to give aid locate at home. Then the recipient will give the contract to the other companies. Thus, Company_i will have $C_i(0, s^*)$ by locating at home, for all \hat{M} . On the other hand, if Company_i locates abroad in line with the $M - \hat{M}$ other companies from the M donors that rejected disbursement, then the contract is shared with all companies that complies; $N - \hat{M}$. Thus, Company_i will have $C_i(\frac{I}{N - \hat{M}}, s'')$ and locates abroad in this situation since $C_i(\frac{I}{N - \hat{M}}, s'') > C_i(0, s^*)$ from (10). Hence, all M companies will locate abroad.

Scenario 2: Donor_i is among the $N - M$ donors that granted aid.

In this case it is always Company_i's best response to locate at home because locating abroad never has any purpose when Donor_i has granted the aid.

So if Donor_i has granted (not granted) aid, Company_i's best response is to locate at home (abroad). Thus, the donors that do not disburse aid will be punished.

C) All donors give aid

In this case, all companies will get $\frac{I}{N}$ irrespective of their choices, so every company locates at home.

Then it follows from the results in section 3.2 that the recipient will not implement any conditions because all donors will grant aid irrespective of the recipient's implementation record.

Note that the larger the number of companies competing for a share of the contract, the less is the chance that each particular company will see it as worthwhile to put pressure on the donor. So if $N > N^{max}$ does no longer hold, there would be no scope for the recipient to make the companies put pressure on the donor, and then we know from section 3.3 that conditionality will work.

Appendix B: Increasing costs of dividing the contract when $N > 2$

Assume first that (12) describes the recipient's decision rule, and that all donors have refused to give aid. To be willing to punish in this situation, Company_i must have a higher expected payoff from locating abroad and having the entire contract with probability $\frac{1}{N-M}$ if $M \in [0, N-1]$ donor-company pairs chooses (no aid, home), compared to locating at home and be disqualified from the contract assignment with certainty. Formally, this condition can be stated as

(15)

$$\frac{1}{N-M} [C_i(I, s'')] + (1 - \frac{1}{N-M}) [C_i(0, s'')] > C_i(0, s^*) \quad , \forall i, \quad M \in [0, N-1], \quad N < N^{\max}$$

and assume that it is satisfied.

Also, it must be in Company_i's interest to punish Donor_i if every donor refuses to disburse aid, even if all the other companies does not punish. Assume then that all donors have refused to disburse aid and that the companies have agreed that all should locate at home at stage 3. In this case, Company_i would have the entire contract if it locates abroad. Then assume that the payoff to Company_i of locating abroad in this situation is higher than to follow the agreement;

$$(16) \quad \frac{1}{N} [C_i(I, s^*)] + (1 - \frac{1}{N}) [C_i(0, s^*)] < C_i(I, s'') \quad , \quad \forall i, \quad N < N^{\max}$$

Since every company would think in the same vain, the companies find themselves in a prisoner's dilemma. Thus, the agreement of locating at home is not credible, and all

companies would locate abroad if all donors did not disburse aid. This implies that the probability for each company of having the contract is $\frac{1}{N}$ in this situation.

If (12), (15) and (16) replace (2), (10) and (11), then all donors know that if they do not give aid, they will be punished even when there are increasing costs of dividing the contract. Hence, if the model in section 3.1-3.2 is modified by the assumptions in this section, there exists a subgame perfect equilibrium in this adjusted model where the recipient can neglect the conditions and still have aid.

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Summary

Despite the importance attached to conditionality by the donors, and the fact that aid is a crucial income source for the recipient, it is found that conditionality fails. One explanation for this failure could be that a halt in aid could trigger the recipient to cancel contracts with companies from donor countries, which creates incentives for the companies to put pressure towards aid disbursement. We use a multi-agent triadic model of the relationships between a recipient and two donors and two companies to illustrate that recipients may use contracts strategically to make companies influence the disbursement decision to avoid implementing the donors' conditions. Failing to take account of the companies' role yields the opposite result in this model, i.e., conditionality becomes successful.

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